

## CRISIS BULLETIN

– INDONESIA IN TRANSITION –

**Nutrition Surveillance in South Sulawesi**  
**Key results for the period: Apr – Jun 2000**

**In 1995, the HKI/GOI Nutrition Surveillance System (NSS) was started in Central Java. After the economic crisis hit Indonesia, it was expanded to other rural as well as urban areas of the country in order to monitor the impact of the crisis on the health and nutrition of the population. The results have been very valuable for identifying important nutritional and health problems, population groups and areas worst affected, and immediate, underlying and basic causes. This has enabled the Government of Indonesia and its international, national and local partners to prioritize and design actions for limiting the potentially severe impact of the crisis on the population. This bulletin reports the main findings for South Sulawesi as collected during the first round of data collection, Apr – Jun 2000.**

*Selection of households*

For each round of data collection, a new sample of households was selected. For this purpose, the whole of South Sulawesi was divided into three ecological zones. Per zone, 30 villages were selected by PPS sampling (probability proportional to size, thus the larger villages have a greater chance of being selected). Per village, 40 households with at least one underfive child were randomly selected by systematic sampling. For the latter, each village was asked to prepare a list of all households with underfive children. From this list, households were selected based on an interval that was determined by the size of the village. For example, in a village with 200 households with underfive children, every fifth household would be selected. The total number of households selected from South Sulawesi per round of data collection was 3,600 (5 zones x 30 villages x 40 households).

*Period of data collection*

Data reported here were collected in South Sulawesi in Apr-Jun 2000.

*Data collected*

Data collected included information on household composition, parental education and occupation, sanitary conditions, land and livestock ownership, food production and

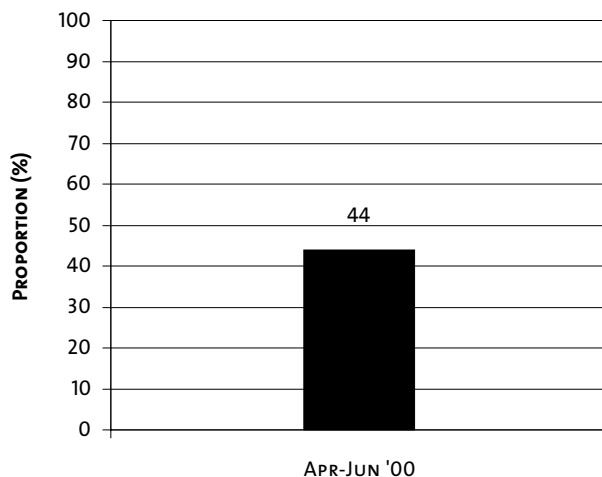
consumption, vitamin A capsule receipt, child and maternal morbidity, and nutritional knowledge. Weight, height and mid-upper-arm circumference of mothers and their underfive children were measured, and blood was collected by finger prick from a random subsample for assessment of hemoglobin concentration.

*Findings presented*

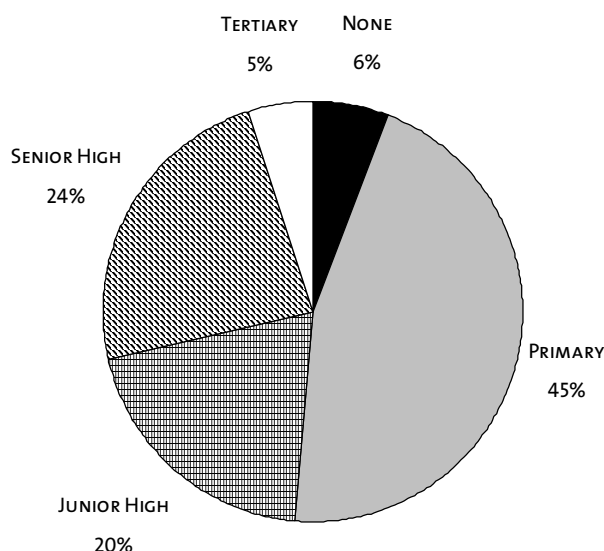
In this crisis bulletin, a selection of data is presented, including parental education, use of family planning, use of adequately iodized salt, receipt of vitamin A capsules, maternal and children's health and exclusive breastfeeding. For West Sumatra, data are given per period of data collection, while data of the best and worst area in 1999-early 2000 for the respective indicator are also shown. The other areas where data were collected by the NSS between early 1999 and early 2000 were the following rural areas: West Java, Central Java, East Java, West Sumatra, Lampung and Lombok, and slums of the following urban areas: Jakarta, Semarang, Surabaya, Makassar, and the four largest cities in West Sumatra. For each indicator, its meaning, the way the information was collected, and the findings, both in general as well as in South Sulawesi, are described.



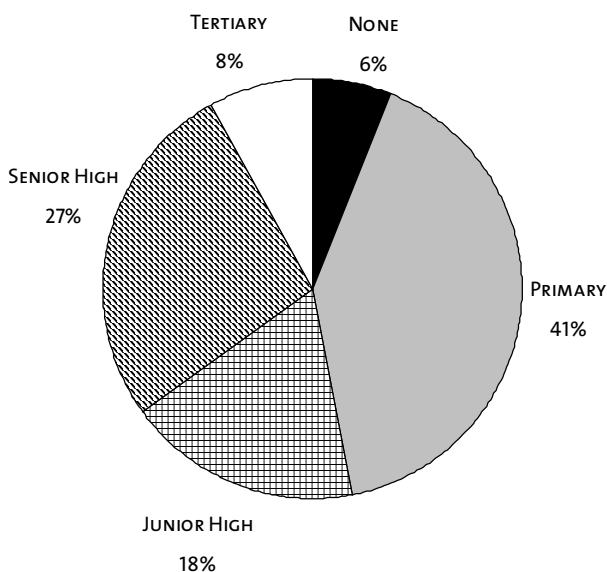
**Fig 1. Households with adequately iodized salt (>30 ppm, using test kit)**



**Fig 2. Mothers without formal education**



**Fig 3. Fathers without formal education**



### Salt iodization (see Fig 1)

What is indicated. Iodine deficiency has serious consequences, even when the clinical sign of deficiency, goiter, has not appeared yet. It reduces intellectual development and can even cause cretinism. The preferred way to prevent iodine deficiency is by consumption of iodized salt, which should now be available throughout Indonesia.

Data collection method. The cooking salt available in the household was tested for its iodine content (more or less than 30 ppm) using a rapid test-kit.

Findings. General – In most NSS site the availability of adequately iodized salt increased between Jan 1999 and Feb 2000 (lowest proportion found: 4%, highest found: 95%). *South Sulawesi* – Less than 45% of households had adequately iodized salt, which was relatively low.

### Mothers without formal education (see Fig 2)

What is indicated. Education provides information, teaches skills and encourages individuals to make their own decisions. In Indonesia, a low level of maternal education is often associated with poor household socioeconomic status.

Data collection method. All mothers were asked how many years of education they had completed, from which the proportion of mothers without formal education was calculated.

Findings. General – In all NSS site, except Lombok, the proportion of mothers without formal education was below 10%. *South Sulawesi* – The proportion of mothers without education was slightly higher than observed elsewhere.

### Fathers without formal education (see Fig 3)

What is indicated. See the explanation on maternal education above. The proportion without formal education mainly reflects the availability of education 10-20 years before the data were collected.

Data collection method. All mothers were asked how many years of education their husbands had completed, from which the proportion without formal education was calculated.

Findings. General – In all NSS site, except Lombok, the proportion of fathers without formal education was below 8%. *South Sulawesi* – The proportion of fathers without education was relatively high.

### Family planning (see Fig 4)

What is indicated. Indonesia's family planning program is a few decades old and its success in terms of coverage and reducing the number of pregnancies is well-known. The proportion of couples that practices family planning is an indicator both of the success of the program as well as of its reach.

Data collection method. Respondents were asked

whether she and her husband were currently practicing family planning.

**Findings. General** – In all NSS site, except West Sumatra and Makassar, more than 65% of couples practiced family planning and this proportion remained the same between Jan '99 and Feb '00. *South Sulawesi* – Only 1 in 2 couples practiced family planning, which was among the second lowest observed.

#### Exclusive breastfeeding of infants younger than 4 months old (see Fig 5)

**What is indicated.** It is recommended that babies should be exclusively breastfed until the age of 4-6 months. However, many already receive other food before they are 4 months old, perhaps because the mother assumes that her breastmilk is not sufficient or that she cannot feed her baby at all times because of work.

**Data collection method.** The mother was asked whether the underfive child was still breastfed and if so whether he/she already received other foods or liquids. Data are presented for children younger than 4 months.

**Findings. General** – In all the NSS sites, exclusive breastfeeding of children younger than 4 months of age was very low and it even decreased slightly between Jan '99-Feb '00 (lowest proportion found: 27%, highest found: 78%). Because of the nutritional and health risks, reasons for the early cessation of exclusive breastfeeding need to be explored urgently. *South Sulawesi* – The proportion of infants younger than 4 months that was exclusively breastfed was the highest observed and needs continued support.

#### Vitamin A capsule receipt among children 6-11 months old (see Fig 6)

**What is indicated.** Vitamin A deficiency increases morbidity and mortality and can cause night blindness and xerophthalmia. In 1999, the target group for vitamin A capsule distribution was expanded to include infants aged 6-11 months, who should receive 100,000 IU of vitamin A.

**Data collection method.** Mothers were asked whether the child received a vitamin A capsule in the last vitamin A distribution month (Feb/Aug) and the child's age at that time was calculated based on birth date.

**Findings. General** – The coverage of vitamin A capsule distribution increased, particularly between Feb '99 and Aug '99, in all NSS site. This is the opposite of what was observed among older children, and means that special efforts are being undertaken to reach this younger target group. However, coverage was still relatively low (13-49%). *South Sulawesi* – Coverage was relatively high, but should be increased further.

Fig 4. Couples who practice family planning

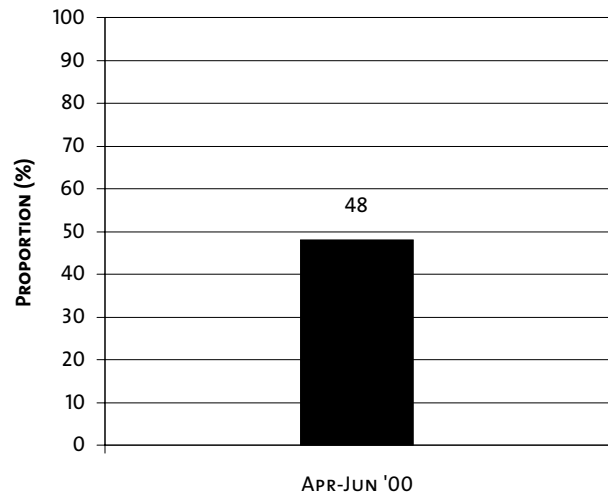


Fig 5. Children younger than 4 months old exclusively breastfed

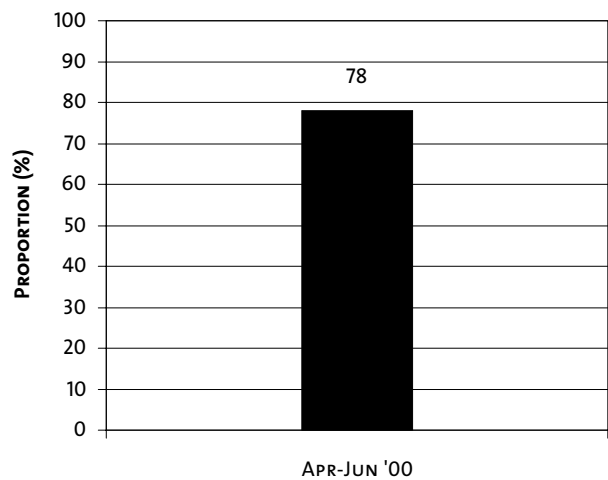
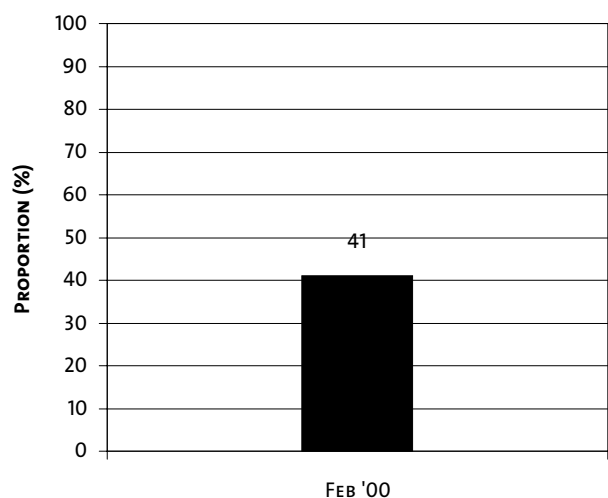
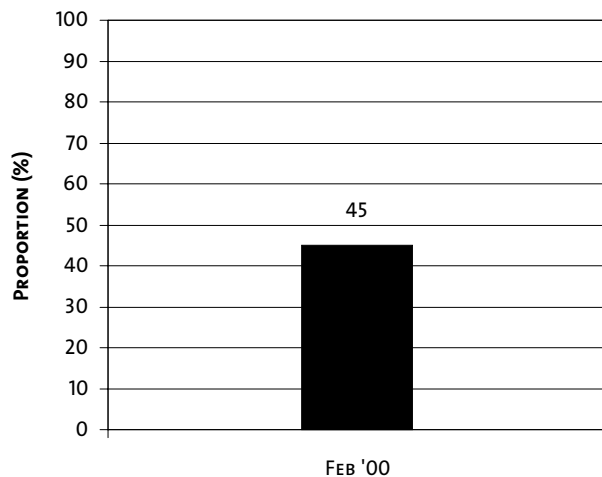


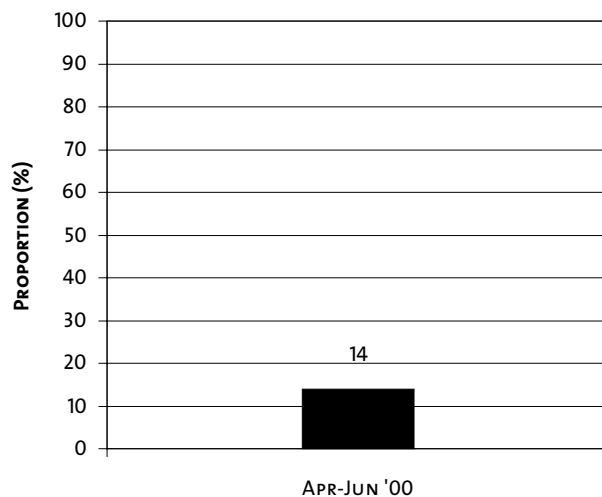
Fig 6. VAC coverage among children aged 6-11 months in Feb 2000



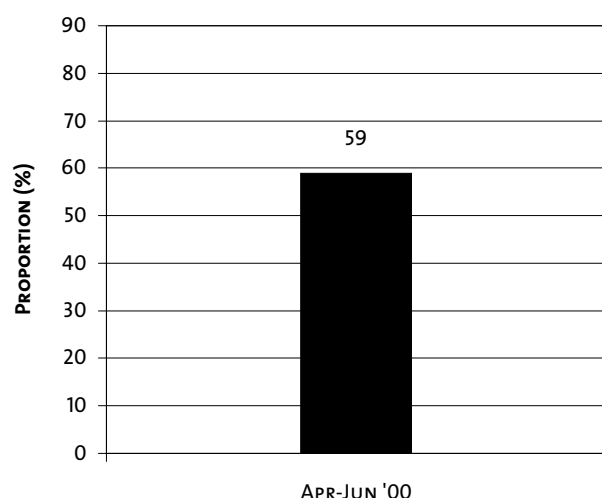
**Fig 7. VAC coverage among children aged 12-59 months in Feb 2000**



**Fig 8. Mothers who received VAC after delivery (birth in previous 12 months)**



**Fig 9. Anemia among children aged 12-23 months (Hb <110 g/L)**



### **Vitamin A capsule receipt among children aged 12-59 months (see Fig 7)**

What is indicated. Since the early 1970s, high-dose vitamin A capsules (200,000 IU) have been distributed every six months to children aged 12-59 mo. Since the capsule distribution months (February and August) were introduced in 1991, coverage has increased to 60-80%.

Data collection method. Same as for children aged 6-11 months (see above).

Findings. General – In most NSS site, coverage of vitamin A capsule distribution declined between Aug '98/Feb '99 and Aug '99, except in West Java, Surabaya and Lombok, where it increased. Coverage ranged from 36 to 81%. *South Sulawesi* – Coverage was very low, compared to other NSS site.

### **Vitamin A capsule receipt among women within one month after delivery (see Fig 8)**

What is indicated. Vitamin A deficiency is also highly prevalent among breastfeeding mothers, which has consequences both for herself as well as for her child. Since 1991, all women should receive a vitamin A capsule (200,000 IU) within one month after delivery. However, the constraint is that they have to be reached within one month after delivery.

Data collection method. Women were asked whether they had received a vitamin A capsule after the birth of their last child. Data were analyzed for women with a child younger than 12 months at the time of data collection.

Findings. General – In each NSS site, the pattern of coverage was different. Coverage was highest in rural Central Java and Semarang, where special efforts to increase coverage have been undertaken since 1996. Coverage ranged from 5 to 40%. *South Sulawesi* – Coverage was very low.

### **Child anemia, 12-23 months old (see Fig 9)**

What is indicated. Anemia prevalence among young children is a very sensitive indicator for changes in the quality of the diet, because diet is the only factor that really affects their hemoglobin concentration. Before Indonesia's crisis, 40% of underfive children suffered from anemia. Thus, over 50% of children suffered the consequences of iron deficiency, including reduced psychomotor and mental development, reduced immunity, and lethargy.

Data collection method. Blood was obtained by finger prick and its hemoglobin concentration was assessed using a HemoCue®.

Findings. General – Anemia prevalence among young children was alarmingly high, both in urban and rural NSS site. In most NSS site, it increased in early 1999 and decreased later in the year. However,

the still very high prevalence (47-80%) calls for immediate action by means of fortified complementary foods and/or iron (or micronutrient) supplements. *South Sulawesi* – Anemia prevalence among young children was very high.

### Maternal anemia (see Fig 10)

What is indicated. Anemia prevalence among mothers is a less sensitive indicator for changes in the quality of the diet, because many factors affect their hemoglobin concentration, including diet, receipt of iron tablets and family planning method used. Before the onset of the crisis, anemia prevalence among mothers was 20-30%. Anemia increases lethargy, reduces productivity and is an important cause of maternal mortality.

Data collection method. Same as for children.

Findings. *General* – Anemia prevalence was higher after the onset of the crisis than before but, by the end of 1999, it had almost returned to pre-crisis levels. Prevalence had been highest in the slums of Jakarta where the decline was also most dramatic. Range of prevalences found: 20-47%. *South Sulawesi* – Prevalence was slightly higher than the national pre-crisis levels.

### Maternal wasting (see Fig 11)

What is indicated. Among mothers, the prevalence of a low bodyweight compared to height (wasting) is a good indicator for shortage of food and is sensitive to changes in food availability.

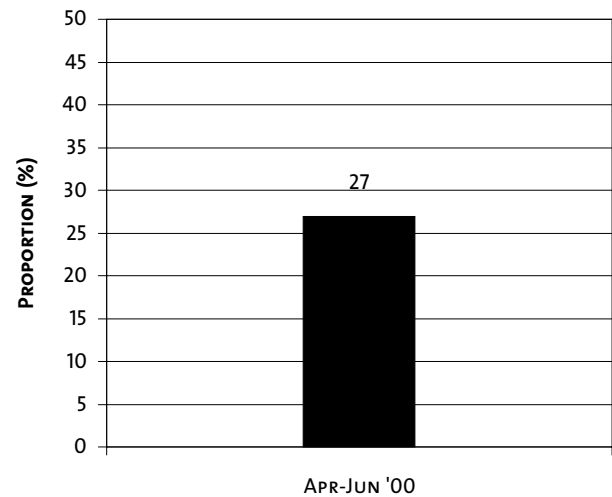
Data collection method. Maternal wasting is defined as a Body Mass Index below 18.5 kg/m<sup>2</sup>, which is calculated by dividing bodyweight (in kilograms) by height (in meters), squared.

Findings. *General* – Prevalence of maternal wasting was highest in urban slum NSS site in early 1999 and has since declined. This indicates that access to food has increased, which means that recovery from the crisis has started. In the rural NSS site, there has been less of a decline, but the increase due to the crisis is also likely to have been less, because of better mechanisms to cope with increased food prices. Range of prevalences found: 10-21%. *South Sulawesi* – Prevalence of maternal wasting was among the lowest observed.

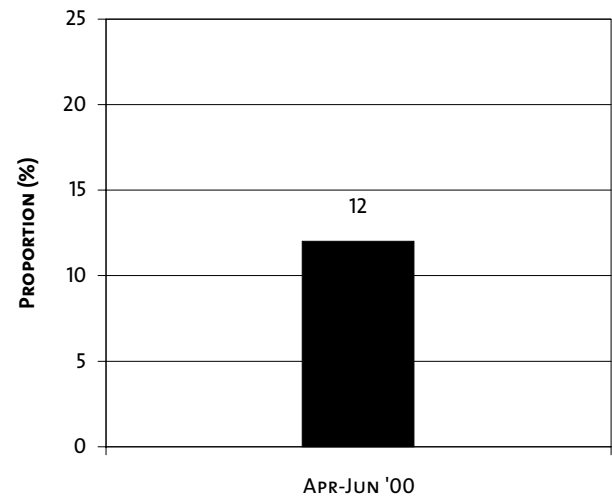
### Child wasting, 12-23 months old (see Fig 12)

What is indicated. Among young children, wasting (low weight for height) can result from both a decrease in the quantity of food consumed as well as from an increase in the incidence or severity of illness. A prevalence of wasting above 20% is usually found only in emergency or disaster situations.

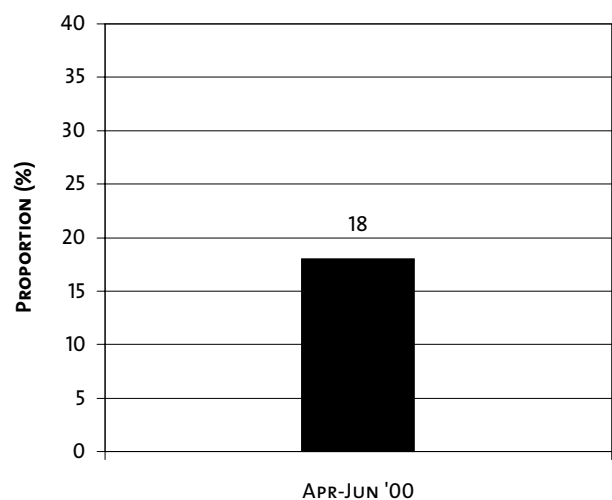
**Fig 10. Anemia among non-pregnant women (Hb <120 g/L)**



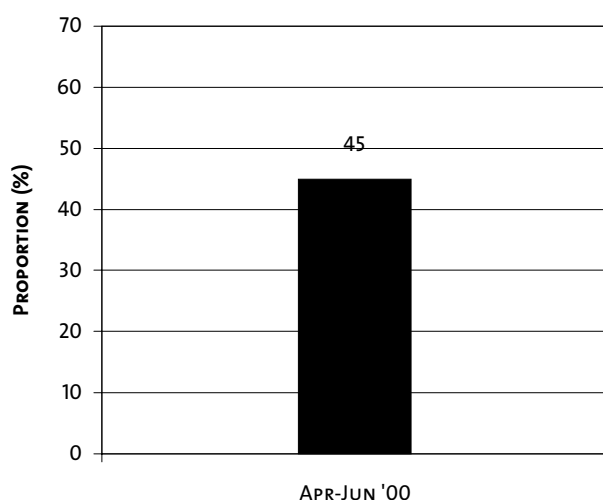
**Fig 11. Wasting among mothers (BMI <18.5 kg/m<sup>2</sup>)**



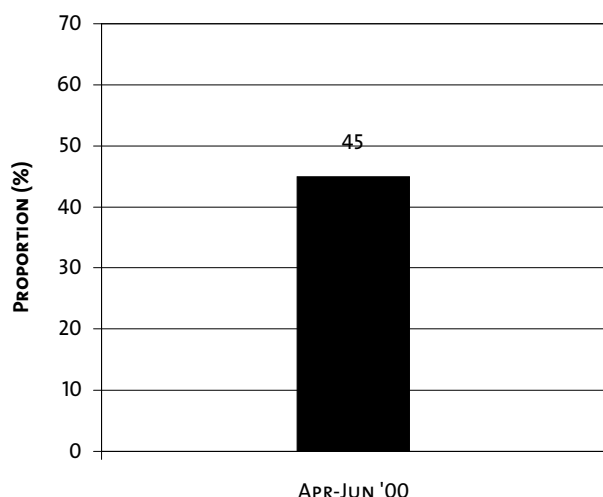
**Fig 12. Wasting among children aged 12-23 months (WHZ <-2 SD)**



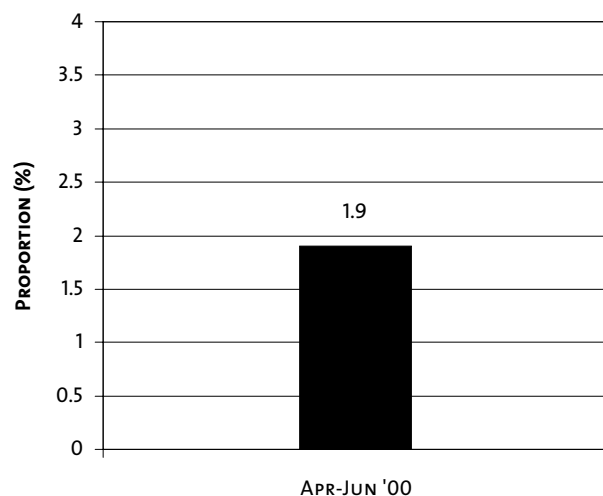
**Fig 13. Stunting among children aged 12-23 months (HAZ <-2 SD)**



**Fig 14. Underweight children aged 12-23 months (WAZ <-2 SD)**



**Fig 15. Maternal diarrhea in week prior to interview**



Data collection method. Here, wasting is defined as a Z-score for weight-for-height that is below 2 standard deviations of that of the reference population (NCHS).

Findings. General – In early 1999, the prevalence of childhood wasting was alarmingly high. Since then, it has decreased in most NSS site, except in Semarang and Lombok. The decrease is most likely due to an increase in access to food, but overall the prevalence is still very high (8-32%). *South Sulawesi* – The prevalence of wasting was relatively high in mid-2000.

#### **Child stunting, 12-23 months old (see Fig 13)**

What is indicated. Stunting (too short stature for age) results from consumption of a diet of inadequate quality for a prolonged period of time. A prevalence of 30-39% is classified as high and of more than 40% as very high. A different prevalence of stunting among areas indicates a difference of dietary quality for a relatively long period of time (at least a few years).

Data collection method. Here, stunting is defined as a Z-score for height-for-age that is below 2 standard deviations of that of the reference population (NCHS).

Findings. General – The prevalence of stunting was lowest in the urban slums on Java. Range of prevalences found: 30-59%. *South Sulawesi* – The prevalence of stunting was high.

#### **Child underweight, 12-23 months old (see Fig 14)**

What is indicated. Underweight (too low weight-for-age) can be the result of both wasting (sudden low weight) as well as stunting (low weight because of short stature). The growth charts shown on the Indonesian health card for underfives monitor the weight-for-age changes of the individual child over time.

Data collection method. Here, underweight was defined as a Z-score for weight-for-age that is below 2 standard deviations of that of the reference population (NCHS).

Findings. General – In most NSS site, the prevalence of underweight had increased slightly between early and mid-1999 and decreased thereafter. Only in Lombok did the prevalence increase between early and late 1999. Range of prevalences found: 32-60%. *South Sulawesi* – The prevalence of underweight was moderate.

#### **Maternal diarrhea (see Fig 15)**

What is indicated. Diarrhea is a form of morbidity that is relatively easy to monitor, because it occurs relatively frequently and its definition (3 or more

loose stools in 24 hours) is commonly shared and easily understood by respondents. Diarrhea prevalence primarily reflects hygiene conditions.

**Data collection method.** Respondents were asked whether they suffered from diarrhea during the previous 7 days.

**Findings. General** – The prevalence of diarrhea among mothers remained the same or decreased slightly between Jan 1999 and Feb 2000, except in West Java and the slums of Jakarta where it increased. Range of prevalences found: 0.1-3.5%. **South Sulawesi** – The prevalence of diarrhea among mothers was average.

### Child diarrhea, 12-23 months old (see Fig 16)

**What is indicated.** See maternal diarrhea above. Diarrhea is generally more prevalent among young children, because they put more contaminated items in their mouths. And, it is likely to be higher in urban slums than in rural areas because of the higher concentration of people and poorer conditions for waste disposal, including open sewage.

**Data collection method.** Respondents were asked whether their child suffered from diarrhea during the previous 7 days.

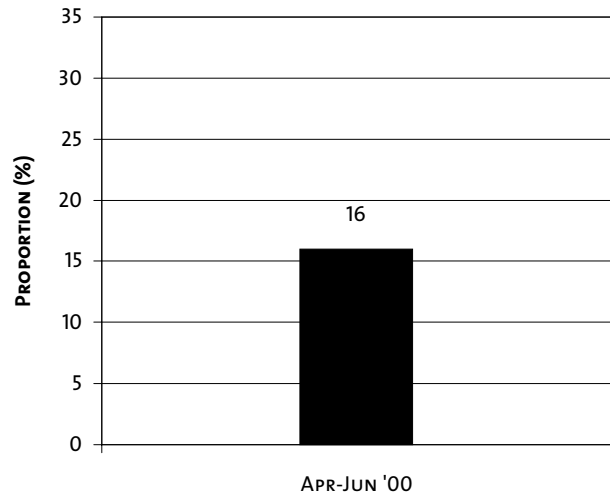
**Findings. General** – The prevalence of diarrhea among children aged 12-23 months was approximately six times higher than among mothers (2-27%), and between Jan 1999 and Feb 2000, it decreased in urban NSS site and remained the same or increased in rural NSS site. **South Sulawesi** – One in every seven children suffered from diarrhea during the week preceding the interview.

## Conclusions

### General

The impact of the economic crisis on nutrition and health has been severe, as shown by the very high prevalence of wasting and anemia among both mothers and young children. From mid-1999, the prevalence of these problems started to decrease in most areas, indicating that recovery from the crisis has started, but there is still a long way to go and special programs are therefore necessary. Programs for limiting micronutrient deficiencies, such as vitamin A capsule (VAC) distribution, have been relatively well maintained. VAC coverage among the new target group of children aged 6-11 months has increased, while good coverage among older children (aged 12-59 months) should be maintained in most areas and increased in particular areas such as urban slums. VAC coverage among mothers within one month after delivery needs to be increased in all

**Fig 16. Diarrhea among children aged 12-23 months in week prior to interview**



areas. The use of iodized salt is still increasing. The prevalence of anemia, which is still very high particularly among young children, calls for efforts to increase iron intake, particularly from supplements and fortified foods, because foods naturally rich in iron are unlikely to be able to bridge the gap between needs and current intake levels. One of the best ways to protect young children from morbidity and to ensure that their nutritional requirements are met in the best possible way is by giving them nothing else but breast milk for the first 4-6 months of life. However, the proportion of children younger than 4 months of age that was still exclusively breastfed was very low in most areas. Because the consequences of introducing complementary foods too early can be devastating, urgent attention should be given to finding out why many mothers introduce other foods to their children too early and how that could best be prevented.

### South Sulawesi

The most evident problems in rural South Sulawesi include the high prevalence of anemia among underfive children and mothers, the poor coverage of vitamin A capsule distribution among all target groups, and the relatively low availability of iodized salt. Because the only data as yet available were from April-June 2000, which was the first round of data collection, no conclusions can be drawn about recent changes. Data collected later in 2000 will show whether the situation is improving.



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